Congress of the United States
House of Representatives
Washington, DC 20515

May 16, 2005

Dear Colleague,

We are writing to clear up recent distortions that have been circulated regarding stem cell research.

You may have seen claims that human embryonic stem cells have produced no positive results. This is simply untrue. We would like to set the record straight by reminding you of a few facts:

- Human embryonic stem cell research first began in **1998**—adult stem cell research has been ongoing since the **1960s**.
- Since 2001, embryonic stem cell research efforts have been hampered by an overly restrictive research policy.
- Even in this short time frame and under funding restrictions, embryonic stem cell research has produced encouraging results regarding its potential to treat diseases that afflict **100 million Americans** including Parkinson's disease, diabetes, cancer, heart disease, spinal cord injuries, and other debilitating conditions.
- The many encouraging research results involving embryonic stem cells in animal models provide us with proof that human embryonic stem cell research does indeed hold promise to treat these diseases in humans (see specifics on reverse).

We simply cannot tie the hands of our scientists while millions of Americans continue to suffer. The stem cell issue is not a competition between adult and embryonic stem cells. Scientists require access to **all** research tools to develop these lifesaving cures. As Members of Congress, we are tasked with ensuring that this research moves forward in the most ethical, effective manner possible; we should not, however, attempt to advise the scientific community on what research is most beneficial.

Should you wish to discuss the issue further or should you wish to receive more information on the facts listed above, please feel free to contact Alissa Southworth with Congressman Bass (5-5206) or Elizabeth Pika with Congresswoman Baldwin (5-2906).

Sincerely,

Charles Bass
Member of Congress

Tammy Baldwin
Member of Congress

Breakthroughs Using Embryonic Stem Cells

Source: Federation of American Societies for Experimental Biology (FASEB)

2005

- **Multiple Sclerosis**: MS is caused by damage of a protective coating around nerve cells called the myelin sheath, which is formed when cells known as oligodendrocytes wrap themselves around the axon of the nerve. Scientists have formed oligodendrocytes from human embryonic stem cells and used them to restore the myelin sheath in mice. If this work can be repeated in humans, it may enable scientists to help individuals with nervous system disorders recover some of their mobility and sensations.
- **Lou Gehrig's Disease and Spinal Cord Injury**: Individuals who suffer spinal cord or motor neuron diseases such as Lou Gehrig's disease (ALS) currently have no treatment option available to reverse their condition. NIH-funded scientists have directed human embryonic stem cells into cells that express markers and transmit nerve impulses in a manner similar to motor neurons. If they are able to function in human beings after transplantation, these cells may also serve as a renewable source of replacement motor neurons to treat spinal cord injury and motor neuron diseases.

2004

- **Heart Disease**: Mice with severe heart defects appeared to return to normal heart function following injections of embryonic stem cells. In addition, heart muscle cells derived from human embryonic stem cells were also able to restore heart rhythm in 11 out of 13 pigs whose biological pacemaker had been damaged. If this work can be repeated in human beings, scientists may be able to use these cells to replace human heart pacemakers rather than the current implanted electronic devices.
- **Restoring Vision Loss**: Retinal pigment epithelium (RPE) cells within the eye play a vital role in the survival and maintenance of the rods and cones that detect light and color. Death of RPE cells may lead to age-related macular degeneration, a major cause of vision loss in persons aged 60 and older. RPE's have now been derived from human embryonic stem cells and may be used to restore vision in those suffering from macular degeneration.
- **Parkinson's Disease**: In 2002, scientists reported that they had successfully derived dopaminergic neurons from mouse embryonic stem cells. When grafted into rat models of Parkinson's disease, the cells were able to improve motor function. More recent work has produced human dopamine producing cells from human embryonic stem cells, which may be used to treat humans with Parkinson's disease.

2003

- **Infertility Treatment**: Scientists report production of functional sperm in mice from human embryonic stem cells, which may be used to treat men who are suffering from sterility or infertility. In addition, oocytes (eggs) have been generated from embryonic stem cells. This has important implications for: creation of new human embryonic stem cell lines, generation of tissue for transplantation, generation of human oocytes, and infertility treatment.
- **Lou Gehrig's Disease and Spinal Cord Injury**: Using pluripotent cells derived from human embryonic germ cells, scientists have been able to partially restore paralyzed rats' ability to move. The rats serve as an animal model of Lou Gehrig's disease (or ALS). This work provides hope that scientists may one day be able to use embryonic stem cells to restore movement to patients suffering from Lou Gehrig's disease.

2002

- **Diabetes**: Scientists at Stanford University report that they could use mouse embryonic stem cells to "cure" a mouse model of diabetes. Their results suggest that embryonic stem cells could serve as a source of the insulin-producing replacement tissue and provide hope that this technique, adapted to human embryonic stem cells, may lead to a cure for human diabetes patients.